

# SPECIFICATIONS

## **SPECIFICATIONS FOR WORK**

### **SPECIAL PROVISIONS**

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## 1. PROJECT DESCRIPTION

The Project involves construction work associated with construction of 12 rubber tire stock tanks on Rock and Swamp creek west of Wisdom Mt, Fish, Wildlife & Parks (FWP) project # 12-28 as identified in the project drawings.

## 2. PROJECT RELATED CONTACTS

Project contacts are designated as follows:

**Owner:** Montana FWP  
1420 E. Sixth Ave.  
PO Box 200701  
Helena, MT 59620-0701

**Project Representative:** Paul Valle  
FWP Project Manager  
600 N. Park Ave.  
Helena, MT 59620-0701  
406-841-4013 (wk)  
406-431-3755 (cell)  
406-841-4004 (fax)

## 3. SITE INSPECTION

All Bidders should satisfy themselves as to the construction conditions by personal examination of the site described in this document. Bidders are encouraged to make any investigation necessary to assess the nature of the construction and the difficulties to be encountered.

## 4. SOILS INFORMATION

Geotechnical investigation work has not been done for this Project. It is the responsibility of the Contractor to conduct all investigations and determine the soil type and digging conditions that may be encountered with this Project prior to bid preparation.

## 5. PROJECT REPRESENTATIVEING, INSPECTIONS, AND TESTING

The Contractor's work will be periodically tested and observed to insure compliance with the Contract Documents. Complete payment will not be made until the Contractor has demonstrated that the work is complete and has been performed as required. If the Project Representative detects a discrepancy between the work and the requirements of the Contract Documents at any time, up to and including final inspection, such work will not be completely paid for until the Contractor has corrected the deficiency.

The Project Representative will periodically monitor the construction of work to determine if the work is being performed in accordance with the contract requirements. The Project Representative does not have the authority or means to control the Contractor's methods of construction. It is, therefore, the Contractor's responsibility to utilize all methods, equipment, manpower, and other means necessary to assure that the work is installed in compliance with the Drawings and Specifications, and laws and regulations applicable to the work. Any discrepancies noted shall be brought to the Contractor's attention, who shall immediately correct the discrepancy. Failure of the Project Representative to detect a discrepancy will not relieve the Contractor of his ultimate responsibility to perform the work as required.

The Contractor shall inspect the work as it is being performed. Any deviation from the Contract requirements shall be immediately corrected. Prior to any scheduled observation by the Project Representative, the Contractor shall again inspect the work and certify to the Project Representative

that he has inspected the work and it meets the requirements of the Contract Documents. All buried work items shall be inspected by the Project Representative prior to backfilling, or may not be considered for payment.

The work will be subject to review by the Project Representative. The results of all such observations shall be directed to the Contractor only through the Project Representative.

## **6. ENGINEERING INTERPRETATIONS**

Timely Engineering decisions on construction activities or results have an important bearing on the Contractor's schedule. When engineering interpretation affects a plan design or specifications change, it should be realized that more than 24 hours may be required to gain the necessary Owner participation in the decision process including time for formal change order preparation as required.

## **7. REJECTED WORK**

Any defective work or nonconforming materials or equipment that may be discovered at any time prior to the expiration of the warranty period, shall be removed and replaced with work or materials which shall conform to the provisions of the Contract Documents. Any material condemned or rejected shall be removed at once from the project site. Failure on the part of the Project Representative to condemn or reject bad or inferior work or to note nonconforming materials or equipment on the Contractors submittals shall not be construed to imply acceptance of such work. The Owner shall reserve and retain all its rights and remedies at law against the Contractor and its Surety for correction of any and all latent defects discovered after the guarantee period.

The Project Representative will have the authority to reject work which does not conform to the Contract Documents and will provide the Owner with a list of defective work and nonconforming materials or equipment. The Owner will then promptly provide the Contractor with the list of defective work on nonconforming materials or equipment.

## **8. UTILITIES**

The exact locations of existing underground utilities that may conflict with the work are not precisely known. It shall be the Contractor's responsibility to contact the owners of the respective utilities and arrange for field location services. **One Call Locators, 1-800-424-5555**

8.1 Notification. The Contractor shall contact, in writing, all public and private utility companies that may have utilities that may be encountered during excavation. The notification includes the following information:

- a. The nature of the work that the Contractor will be performing.
- b. The time, date and location that the Contractor will be performing work that may conflict with the utility.
- c. The nature of work that the utility will be required to perform such as moving a power pole, supporting a pole or underground cable, etc.
- d. Requests for field location and identification of utilities.

A copy of the letter of notification shall be provided to the Project Representative. During the course of construction, the Contractor shall keep the utility companies notified of any change in schedule or nature of work that differs from the original

notification.

- 8.2 Identification. All utilities that may conflict with the work shall be the Contractor's responsibility to locate before any excavation is performed. Field markings provided by the utilities shall be preserved by the Contractor until actual excavation commences. All utility locations on the Drawings should be considered approximate and should be verified in the field by the Contractor. The Contractor shall also be responsible for locating all utilities that are not located on the Drawings.
- 8.3 Removal or Relocation of Utilities. All electric power, street lighting, gas, telephone, and television utilities that require relocation will be the responsibility of the utility owner. A request for extending the specified contract time will be considered if utility owners cause delays.
- 8.4 Public Utilities. Water, sewer, storm drainage, and other utilities owned and operated by the public entities shall, unless otherwise specifically requested by the utility owner, be removed, relocated, supported or adjusted as required by the Contractor at the Contractor's expense. All such work shall be in accordance with these Specifications, or the Owner's Standard Specifications or written instructions when the work involved is not covered by these Specifications.
- 8.5 Other Utilities. Utilities owned and operated by private individuals, railroads, school districts, associations, or other entities not covered in these Special Provisions shall, unless otherwise specifically requested by the utility owner, be removed, relocated, supported or adjusted as required by the Contractor at the Contractor's expense. All work shall be in accordance with the utility owner's directions, or by methods recognized as being the standard of the industry when directions are not given by the owner of the utility.
- 8.6 Damage to Utilities and Private Property. The Contractor shall protect all utilities and private property and shall be solely responsible for any damage resulting from his construction activities. The Contractor shall hold the Owner and Project Representative harmless from all actions resulting from his failure to properly protect utilities and private property. All damage to utilities shall be repaired at the Contractor's expense to the full satisfaction of the owner of the damaged utility or property. The Contractor shall provide the Owner with a letter from the owner of the damaged utility or property stating that it has been repaired to the utility owner's full satisfaction.
- 8.7 Structures. The Contractor shall exercise every precaution to prevent damage to existing buildings or structures in the vicinity of his work. In the event of such damages, he shall repair them to the satisfaction of the owner of the damaged structure at no cost to the Owner.
- 8.8 Overhead Utilities. The Contractor shall use extreme caution to avoid a conflict, contact, or damage to overhead utilities, such as power lines, streetlights, telephone lines, television lines, poles, or other appurtenances during the course of construction of this project.
- 8.9 Buried Gas Lines. The Contractor shall provide some means of overhead support for buried gas lines exposed during trenching to prevent rupture in case of trench caving.

- 8.10 Survey Markers and Monuments. The Contractor shall use every care and precaution to protect and not disturb any survey marker or monuments, such as those that might be located at lot or block corners, property pins, intersection of street monuments or addition line demarcation. Such protection includes markings with flagged high lath and close supervision. No monuments shall be disturbed without prior approval of the Project Representative. Any survey marker or monument disturbed by the Contractor during the construction of the project shall be replaced at no cost to the Owner by a licensed land surveyor.

The Contract Plans may show utility locations based on limited field observation and information provided to the Project Representative by others. **The Project Representative cannot guarantee their accuracy.** The Contractor shall immediately notify the Project Representative of any discrepancies with utility locations as shown on the Contract Drawings and/or their bury depths that may in any way affect the intent of construction as scoped in these specifications.

There will be no separate payment for exploratory excavation required to locate underground utilities.

## **9. CONSTRUCTION SAFETY**

The Contractor shall be solely and completely responsible for conditions of the jobsite, including safety of all persons (including employees) and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. Safety provisions shall conform to U.S. Department of Labor (OSHA), and all other applicable federal, state, county, and local laws, ordinances, codes, and regulations. Where any of these are in conflict, the more stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize himself with the aforementioned safety provisions shall not relieve him from compliance with the obligations and penalties set forth therein.

## **10. CONSTRUCTION LIMITS AND AREAS OF DISTURBANCE**

- 10.1 Construction Limits. Where construction easements or property lines, are not specifically called out on the Plan Drawings, limit the construction disturbance to 10 feet when measured from the edge of the slope stake grading, or to the adjacent property line, whichever is less. Disturbance and equipment access beyond this limit is not allowed without the written approval of both the Project Representative and the owner of the affected property. If so approved, disturbance beyond construction limits shall meet all requirements imposed by the landowner; this includes existing roads used and/or improved as well as the construction of new access roads. Special construction, reclamation, or post-construction road ripping or other closure provisions required by the landowner on access roads beyond the construction limits shall be performed by the Contractor at no additional cost to the Owner.
- 10.2 Areas of Disturbances. Approved areas of disturbance are those areas disturbed by construction activities within the construction limits and along designated or approved

access routes. Such areas may require reclamation and revegetation operations, including grading to the original contours, top soiling with salvaged or imported topsoil, seeding, fertilizing, and mulching as specified herein. Other areas that are disturbed by the Contractor's activities outside of the limits noted above will be considered as site damage or unapproved areas of disturbance subject to Repair and Replacement Quality as specified in the General Conditions. This includes areas selected by the Contractor outside the defined construction limits for mobilization, offices, equipment, or material storage.

#### **11. PROTECTION OF ADJACENT IMPROVEMENTS**

Retain and protect all adjacent improvements not called for removal on the drawings. Restore all damaged items to pre-existing condition.

#### **12. TREE PROTECTION AND PRESERVATION**

The Contractor and the Owner shall individually inspect all trees within the project construction limits prior to construction. The Owner shall determine which trees are to be removed and which trees are to be preserved. Construction of the grading, utilities and various roadway facilities must not, in the opinion of the Project Representative, significantly damage the trees root system or hinder it's chances for survival. Reasonable variations from the plans, as determined by the Project Representative, may be employed to ensure the survival of trees.

#### **13. CONSTRUCTION SURVEYS**

Contractor shall be aware of property pins and survey monuments. Damage to these pins will require replacement of such by a registered land surveyor at no cost to the owner.

#### **14. MATERIALS SALVAGE AND DISPOSAL**

If the Owner requests to salvage material removed from the project, notify the Owner within 24 hours prior to delivery at a specific location approved by the Owner.

Haul and waste all excavated material to a legal site and obey all state, county, and local disposal restrictions and regulations.

#### **15. STORED MATERIALS**

Contractor shall use an approved storage area for materials. Materials and/or equipment purchased by the Contractor may be paid for on a monthly basis providing invoices for said materials and equipment are presented to the Project Representative, and such materials have been approved through the submittal process are stored and insured.

#### **16. STAGING AND STOCKPILING AREA**

Contractor shall use staging and stockpiling sites for temporary traffic control devices and equipment as approved by the Owner. Contract drawings may show approved staging and stockpiling locations. Notify Owner within 24 hours for approval of staging and stockpiling sites not shown on the contract drawings.

#### **17. SECURITY**

The Contractor shall provide all security measures necessary to assure the protection of equipment, materials in storage, completed work and the project in general.

## **18. CLEANUP**

Cleanup for each item of work shall be fully completed and accepted before the item is considered final. If the Contractor fails to perform cleanup within a timely manner the Owner reserves the right to shut down construction activities.

## **19. ACCESS DURING CONSTRUCTION**

Provide access to all public and private roadways and approaches along the project throughout the construction period.

## **20. CONSTRUCTION TRAFFIC CONTROL**

The contractor is responsible for providing safe construction and work zones within the project limits by implementing the rules, regulations, and practices of the Manual on Uniform Traffic Control Devices, current edition.

## **21. SANITARY FACILITIES**

On-site toilet facilities for employees of Contractor and Subcontractors shall be provided and maintained in a sanitary condition.

## **22. PROPOSAL ITEM DESCRIPTIONS AND ESTIMATED QUANTITIES**

### **1. Mobilization/Demobilization:**

- A. \* Description: This bid item shall consist of the preparatory work and operations necessary performed by the Contractor for the movement of personnel, equipment, supplies, and incidentals to and from the work site. The work includes those actions necessary for obtaining necessary permits required for mobilization; for the establishment of all offices and facilities necessary to work on the project; for premiums on contract bonds; for insurance for the contract; and for other work on the various items on the project site. Mobilization costs for subcontracted work shall be considered to be included.

\* Estimated Quantity:

- 1 lump sum

### **2. 1 ¼" HPDE Pipe installation:**

- \* Description: This bid item includes all equipment, labor, materials and associated work for the installation of 1 ¼" HPDE SDR 11 pipe and tee connections to existing well systems.

\* Estimated Quantity:

- 9,600 linear feet

### **3. Five tire stock tank installation:**

- \* Description: This bid item includes all equipment, labor, materials and associated work for the installation of a bank of five rubber tire stock tanks,



including drain and over flow assemblies, fill assemblies, valves, steel pipe guards, and other various items in two locations as noted in the specifications and drawings.

\* Estimated Quantity:

- 1 Lump sum

4. Two tire stock tank installation:

\* Description: This bid item includes all equipment, labor, materials and associated work for the installation of a bank of Two rubber tire stock tanks, including drain and over flow assemblies, fill assemblies, valves, steel pipe guards, and other various items as noted in the specifications and drawings.

\*Estimated Quantity:

- 1 lump sum

## **SECTION 01450**

### **MOBILIZATION/DEMOBILIZATION**

Added Section.

#### **PART 1                    GENERAL**

##### **1.1      DESCRIPTION**

- A. This item shall consist of the preparatory work and operations necessary performed by the Contractor for the movement of personnel, equipment, supplies, and incidentals to and from the work site. The work includes those actions necessary for obtaining necessary permits required for mobilization; for the establishment of all offices and facilities necessary to work on the project; for premiums on contract bonds; for insurance for the contract; and for other work on the various items on the project site. Mobilization costs for subcontracted work shall be considered to be included.
- B. Contractor's cost for administration, bonding, insurance, and site documents shall be included in mobilization and shall not be paid as a separate item.
- C. All equipment moved to the project sites shall be in good mechanical condition and free of fuel, oil, lubrication, or other fuel leaks. The Contractor shall immediately remove any equipment potentially or actually discharging environmentally damaging fluids.
- D. All equipment moved to the project sites shall be thoroughly cleaned before it is brought to the sites to prevent the introduction of weed seeds. Equipment removed from the sites may not be returned to the sites again until it is thoroughly cleaned again.

#### **PART 2                    PRODUCTS – NOT USED**

#### **PART 3                    EXECUTION – NOT USED**

#### **PART 4                    MEASUREMENT AND PAYMENT**

##### **4.1      MEASUREMENT**

- A. There will be no direct measurement of this item.

##### **4.2      PAYMENT**

- B. Partial payments for mobilization/demobilization will be made based on the lump sum bid price as follows:
  - 50% of the amount bid for mobilization/demobilization when the Contractor has moved on-site and begun construction activities.
  - 100% of the amount bid for mobilization/demobilization when 100% of the contract amount (exclusive mobilization/demobilization) has been completed.

**END OF SECTION 01450**

## SECTION 02225 - PIPELINE TRENCHING AND BACKFILL

### PART 1 - GENERAL

#### 1.1 DESCRIPTION:

Work in this section consists of all labor, materials, and equipment necessary to do all work and related items as shown on the drawings, specified herein or incidental to proper execution of the work, including trenching, and backfilling or plowing.

#### 1.2 RELATED WORK DESCRIBED ELSEWHERE:

Water System - Section 2665

#### 1.3 QUALITY ASSURANCE:

For actual prosecution of the work, use only personnel who are skilled in the work required, familiar with recommended methods of installation, and thoroughly familiar with the requirements of this work.

#### 1.4 UNDERGROUND OBSTRUCTIONS:

The Contractor shall contact all utilities for locations of their installations prior to initiating work.

The Contractor shall preserve, intact, any underground pipes or other utilities encountered during construction. In case any such utilities or other structures are accidentally broken or damaged, they shall be immediately replaced in a condition at least equal to that in which they were found, all at the expense of the Contractor.

The Contractor shall be solely responsible for locating all existing underground utilities, including service connections, in advance of excavating or trenching, by contacting the Owners thereof and prospecting. The Contractor shall use his own information and shall not rely solely upon information shown on the Drawings concerning existing underground installations. The Contractor shall repair all damage to existing utilities or property at his own expense. The Contractor shall pay all costs associated with having utility company representatives on the site for this work and shall include these costs in the price bid for related items of work.

### PART 2 - MATERIALS

#### 2.1 PIPE SLEEVES:

Pipe sleeves shall be Schedule 40 PVC pipe, twice the diameter of the pipe to be installed in it, or equal approved by the Owner's Representative.

### PART 3 - EXECUTION

#### 3.1 SURFACE CONDITIONS:

A. Inspection

Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

Verify that trenching may be completed in accordance with the original design and the referenced standards.

B. Discrepancies

In the event of discrepancy, immediately notify the Owner's Representative.

Do not proceed with installation in areas of discrepancy until all discrepancies have been fully resolved.

3.2 TRENCHING OR PLOWING:

A. General

All trenching shall be done in a manner to minimize impacts to existing vegetation and finish surfaces.

Every effort shall be made to close all trenches at the end of each day's work. Reseed backfilled trenches with a mixture of species approved in advance by the Owner's Representative. Where trenches are not closed at the end of the day, Contractor shall accept all liability for any damage or injury that may result from open trenches. Provide barricades and warning tape as necessary around all open trenches.

Perform all trenching required for the installation of items where the trenching is not specifically described in other sections of these Specifications.

B. Depth

All water line shall have a minimum cover of 18" above the pipe unless otherwise noted on the plan sheets.

C. Grading and Stockpiling Trenched Material

Control the stockpiling of trenched material in a manner to prevent water running into the excavations.

Do not obstruct surface drainage but provide means whereby storm and waste waters are diverted into existing gutters, other surface drains, or temporary drains.

D. Alternative installation

Plowing or pulling of the piping will be allowed as long as all other specifications such as depth are adhered to. Any piping damaged or deformed in the installation process will be replaced.

3.3 SLEEVES:

A. Locations

Sleeves shall be installed wherever routing of a pipe, wiring, or both crosses a paved or gravel area or passes through a bored hole.

B. Methods

Sleeves laid in open trenches shall be uniformly and evenly supported by undisturbed soil on the trench bottom. Backfill shall conform to standards hereinafter specified.

Sleeves installed in borings shall be forced through and shall have a snug fit throughout the length of the bored hole. Sleeves cracked or broken shall not be accepted.

3.4 BACKFILL:

A. Inspection

The trenching shall not be backfilled until inspection has been completed and the pipe installation, including the grade, alignment and jointing has been found to be in compliance with the requirements of the plans and specifications.

B. Around and Over Pipe

Select backfill material consisting of sand, fine gravel or select earth, free of large lumps or rocks larger than 3/4 inch shall be used in backfilling around and over the installed pipe.

The select material shall be obtained from the excavation material removed from the trench and shall be processed by screening, sifting, or selective sorting, so as to produce the type of backfill herein specified. The Contractor may, at his option and own expense, provide an acceptable imported material.

This backfill material shall be carefully deposited around and over the pipe in layers not more than six (6) inches thick, loose measurement, unless otherwise permitted by the Owner's Representative, and uniformly compacted to at least 95 percent of the maximum density obtainable at optimum moisture content as determined by AASHTO T99 Method A or D (latest revision), until the pipe has a cover depth of at least one half foot (6").

C. Remainder of Trench Backfill

The remaining depth of the trench shall be backfilled with excavation materials removed from the trench.

This material shall be carefully deposited in layers of a thickness suitable to the equipment selected by the Contractor for proper compaction.

All material shall be compacted to at least 85 percent of the maximum density as determined by AASHTO T99 Method A or D (latest revisions). The method of compaction selected by the Contractor shall not cause damage of any nature of the installed pipe.

3.6 CLEANUP:

Upon completion of the work, the entire site shall be cleared of all debris, and ground surfaces shall be finished to smooth, uniform slopes and shall present a neat and

workmanlike appearance. Cleanup shall be considered an incidental item, and no additional payment shall be made for any cleanup item. All fences, culverts, gravel roadways or other obstructions removed during construction shall be replaced in a condition at least equal to their existing condition.

3.7 MAINTENANCE:

The Contractor shall, for a period of one (1) year completion and final acceptance of the work, maintain and repair any trench settlement which may occur, and shall make suitable repairs to any other structures which may become damaged as a result of settlement. All such maintenance and repair shall be at the Contractor's expense.

END OF SECTION 02225

## **DIVISION 2 SITE WORK**

### **SECTION 2665 WATER SYSTEM**

#### **Part 1: GENERAL**

##### **1.01 SUMMARY**

- A. Section includes: Furnishing and installing contractor furnished labor and materials to complete a stock water system and assemblies as shown on the drawings and specified herein.

##### **1.02 REFERENCES**

##### **1.03 SUBMITTALS:**

- A. Manufactures Literature: Submit 1 copy of the manufacture's descriptive data including the manufacturer's list numbers for valves to be used on this project.
- B. Certificates of conformance: Submit 1 copy of written certification from the supplier of the contractor furnished pipe to be used on this project that it conforms to the requirements of this specifications section.

##### **1.04 QUALITY ASSURANCE:**

- A. Failure Criteria: Not limited to the following

1. Evidence of leakage
2. Evidence of breakage of pipe
3. Malfunctioning valves
4. Blockage of piping
5. Pressure drop

- B. Labeling Requirements

1. The factory labels shall remain fixed on all materials, fittings, and devices. Any materials, fittings or Devices that are missing legible labels will be considered unidentifiable and not suitable for use on this project.

#### **PART 2: PRODUCTS**

##### **2.01 CONTRACTOR FURNISHED MATERIALS:**

- A. Pipe and fittings: Pipe size, type and ratings shall be as shown on the drawings of as specified. Unless specified, fittings shall be the same size as the adjoining pipeline except where reducers are required to enter a valve body or reduce to another pipe size. Fitting pressure ratings shall be equal to or greater than the rating for the adjoining pipeline. The working pressure on the pipeline is 160 PSI. All pipe, fittings, flow control devices and other devices installed in this section of the pipeline shall be rated for that working pressure or greater.
  - 1. High Density Polyethylene (HDPE) Pipe Shall be heat fused butt welded SDR 11 160 PSI rated pipe conforming to applicable ASTM standards F 2160, F 714 and D3350.
- B. Steel pipe shall be hot-dipped zinc coated welded and seamless schedule 40 conforming to applicable ASTM standards A53 REV A-89, A53/A53M-99b.
- C. Curb stop valve W/Drain: Mueller H-10288 or equal with these features: o-ring type valve, I.P.. threaded inlet and outlet, ¼ turn check, 175 psi working pressure, Minneapolis top threads. The body, tee-head and stem shall be made of brass or bronze. A drain port is required.
- D. Manhole with lid described herein. The manhole box shall extend 4 inches above the ground surface when buried at pipe depth shown on the plans.
- E. Valve keys: Shall be Tee handle type, Compatible with valves described herein. Furnish two keys.
- F. Sump gravel: Gravel shall be ½ to ¾ inch and shall be washed free of all fines under ½ inch in size. Cover gravel with polyethylene sheeting 6 mil minimum thickness.

- G. Gate valves: Screw-in Bonnet - Non-Rising Stem - Solid Wedge - Threaded 125 C200 PSI/13.8 Bar  
Non-Shock Cold Working Pressure - Conforms to MSS SP-80

### **PART 3: EXECUTION**

#### **3.01 PREPARATION**

- A. Excavation and backfill: Shall be according to Section titled - Trench excavation and backfill.

#### **3.02 INSTALLATION**

- A. General: HPDE pipe shall be to ASTM standards the pipe shall not be covered until the pressure tests have been approved.

B. Joints and fittings shall be assembled with the pipe manufacturer's instructions. The ends of the pipe shall be covered during the process of the work to keep the interior of the pipe clean.

C. Thread compound used shall be used on all threaded joints and shall be suitable for potable water systems.

D. Bedding: shall be according to section titled Trench excavation and backfill.

E. Curb stop valve assembly: Install curb stop valve, man hole with lid, slip to thread adapters, unions, reducers if required.

### **PART 4: MEASUREMENT AND PAYMENT**

#### **4.01**

A. units: HPDE pipe will be measured and paid for by the number of lineal feet of pipeline measured along the centerline at the ground surface. Measurement for curb stop valve assembly, curb stop valve assembly w/drain assembly, air relief valve assembly, drain assembly, and watering assembly shall be by the number of each assembly completed in place as detailed on the respective drawings and as specified. Pipe within assemblies, gravel, and all components and fittings listed as part of the assemblies or shown on the assembly drawings are considered part of the assemblies and will not be paid for separately. There is no separate payment for testing: the contractor shall include consideration for this item under other bid items. Trenching, backfilling and compacting including between water conveying parts of an assembly, will be measured for payment under section titled – Trench excavations and backfill.

#### **4.02**

A. Payment: Prices and payment listed below will be full compensation for the work described in this section: Payment will be made under:

<u>Pay item</u>	<u>Pay unit</u>
HPDE pipe SDR 11 1 ¼ inch diameter including pipeline connections	Linear foot

End of Section



## **DIVISION 2 SITE WORK**

### **SECTION 2802 WATER TROUGHS**

#### **Part 1: GENERAL**

##### **1.01 WORK INCLUDED:**

- A. Description: Furnishing and installing water trough assemblies in accordance with these specifications and to the sizes, types and dimensions as shown on the drawings.

#### **Part 2: PRODUCTS**

##### **2.02 CONTRACTOR FURNISHED MATERIALS:**

- A. Stock water troughs/tanks: Tanks shall be 13' rubber tire stock tanks.
- B. Gravel: Pit run  $\frac{3}{4}$ " to 1-1/2" gravel.
- C. Steel pipe cribbing/guard panels: 3" steel pipe frames and steel pipe posts. Provide submittal for review and approval.
- D. Concrete: 6' concrete apron and tank bottom as indicated on the plans.
- E. Trough assemblies: fill assemblies and drain/overflow assemblies including all valves, piping and fittings as shown on the plans and noted in the specifications.
- F. Mainline tee connections to existing water well systems.

#### **Part 3: EXECUTION:**

##### **3.01 PREPARATION:**

- A. Clearing and grubbing: An area approximately 25' in diameter shall be cleared of all brush and large rock. The tank and appurtenances at each water facility shall then be installed as shown on the drawings.
- B. Excavation and backfill: shall be performed in accordance with the section titled - Trench excavations and backfill.

##### **3.02 INSTALLATION:**

A. General: Special care shall be taken to place the tank gravel on a firm base. The installed stock tank shall be level. The water trough shall be placed at the watering assembly as shown on the drawings.

- 1. Water trough assembly w/steel pipe guard panels: Water trough shall be located on an existing fence line and shall be installed as shown on the drawings detail titled "Rubber Tire Tank Details". Fence removal is required and will be considered incidental to this bid item.
- 2. Water trough assembly not constructed on a fence line shall be installed as shown on the drawing titled "Rubber Tire Tank Details".

B. Steel members:

C. Gravel: Place the gravel to the depth as shown on the drawings.

##### **3.03 FIELD QUALITY CONTROL**

- A. General: It is the contractor's responsibility to perform all required tests. The contractor shall supply and temporarily install a gauge on each partition of pipeline being pressure tested, to

monitor any pressure drop during the test. The four hour pressure tests, shall be performed immediately when a segment as detailed by the contractors work schedule, is completed and flushed.

B. Pressure testing procedure: Tests shall be conducted as follows:

1. The presence of the project manager or his representative is not required at the first pressure test. The portion to be tested shall be pressurized to the maximum operating pressure. Fill and flush the line being tested to eliminate air from the line. Correct all deficiencies evident during this test and repeat the test.
2. For the second pressure test, the contractor shall notify the project manager 24 hours prior to testing. The owner or their representative shall witness this test. Failure to notify the owner shall result in a repeat of the test even if that requires re-excavation of the portion being tested. The portion being tested shall be pressurized to maximum operating pressure. Do not fill the pipe at a rate greater than 1 foot per second. The pressure shall be held for a minimum of 4 hours; then inspected for failure criteria. Failure shall be considered a pressure drop in excess of 5 psi over the 4 hour test. Correct deficiencies evident during the test and repeat the test until approved. After approval, the contractor shall perform the flow test

C. Flow test: the flow test shall be completed at each tank after completion of the pipeline. The contractor shall install necessary equipment to determine the flow rate and document the time, location, test method, flow rate, name of testing personnel. The documentation shall be provided to the project manager. After approval the contractor may backfill the tested section of pipeline.

D. Final test: A final test shall be conducted on the total system after completion of backfilling. Pressurize the system. The pressure shall be maintained for a period of 24 hours; then the system inspected for failure criteria. All deficiencies evident shall be corrected and the test repeated until approved.

E. Warrantee: All work and materials associated with the balance of this project shall have a warrantee for a period of one year from the date of final acceptance.

#### **Part 4: MEASUREMENT AND PAYMENT**

##### **4.01 METHOD OF MESUREMENT**

A. Units: The water trough assemblies will be measured and paid for lump sum for each water trough assembly, including all appurtenances, main line connections, acceptably installed in accordance with the drawings and specifications.

##### **4.02 BASIS OF PAYMENT:**

A. Payment: prices and payment will be full compensation for the work described in this section. Payment will be made under:

<u>Pay item</u>	<u>Pay unit</u>
Five rubber tire tank assemblies w/Steel Pipe Guard panels (two locations)	lump sum
Two rubber tire tank assembly w/Steel Pipe Guard panels (one location)	lump sum

END OF SECTION